

TABLE 16

Domestic R&D paid for by the company and others and performed by the company, by business activity: 2019

(Millions of U.S. dollars)

Business activity ^a	Business code ^b	Total	Paid for by the company	Paid for by others
All business activities	21100–81000	492,956	428,968	63,989
Oil and gas extraction	21100	712	687	24
Mining	21200	122	94	28
Support activities for mining, including oil and gas	21300	1,364	1,268	96
Utilities	22100	274	236	38
Construction	23000	886	859	26
Food manufacturing	31100	4,199 - 6,169	4,200	0 - 1,969
Beverage manufacturing	31210	653	551	102
Tobacco manufacturing	31220	189	180	9
Textile, apparel, and leather products manufacturing	31990	831	802	29
Wood products manufacturing	32100	232	225	6
Paper manufacturing	32200	1,478	1,478	*
Printing and related support activities	32300	447	447	0
Petroleum refineries	32401	525 - 2,495	526	0 - 1,969
Asphalt paving, roofing, and saturated materials manufacturing	32402	110	110	0
Other petroleum and coal products manufacturing, including motor oil, hydraulic fluid, and charcoal	32403	106 - 2,076	107	0 - 1,969
Basic chemicals manufacturing	32510	2,639	2,459	180
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	32520	1,293	1,203	90
Pesticide, fertilizer, and other agricultural chemicals manufacturing	32530	2,094	1,736	359
Pharmaceutical, medicinal, botanical, and biological products (except diagnostic substances) manufacturing	32541	56,018	50,038	5,980
In vitro diagnostic substances manufacturing	32542	1,388	1,354	34
Biotechnology-based pharmaceutical and biological products (except diagnostic substances)	32543	28,850	26,005	2,845
Soap, cleaning compound, and toilet preparations manufacturing	32591	2,311 - 4,281	2,312	0 - 1,969
Paint, adhesive, and other chemical manufacturing	32592	1,423	1,372	51
Plastics and rubber products manufacturing	32600	2,997	2,909	88
Clay and glass products manufacturing	32710	1,326	1,318	9
Cement, concrete, lime, gypsum, and other nonmetallic mineral products manufacturing	32790	439	417	23
Primary metal manufacturing	33100	743	720	24
Fabricated metal products manufacturing	33200	2,816 - 4,786	2,817	0 - 1,969
Agricultural machinery and equipment manufacturing	33311	1,550	1,542	8
Construction machinery manufacturing	33312	1,276	1,273	3
Mining, oil, and gas field machinery and equipment manufacturing	33319	1,104	1,060	44
Semiconductor machinery manufacturing	33321	4,396	3,790	606
Industrial machinery manufacturing (except semiconductor machinery)	33322	1,387	1,150	237
Photographic and photocopying equipment manufacturing	33331	162	148	14
Commercial, service industry, temperature control, and air-flow control machinery manufacturing	33332	1,712	1,557	156
Digital cameras manufacturing	33333	415	411	4
Engine, turbine, and power transmission equipment manufacturing	33360	2,551	2,233	318
Metalworking and other general purpose machinery manufacturing	33390	2,396	2,181	215
Computers and peripheral equipment manufacturing and magnetic and optical media	33412	20,122	19,990	132

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Telephone apparatus manufacturing, including routers, modems, and gateways	33421	8,495	8,450	46
Radio, television, and wireless communication equipment manufacturing	33422	2,589 i	1,628 i	961 i
Other communication equipment manufacturing (except radio, television, and wireless communication equipment)	33429	1,781	1,522	259 i
Audio and video equipment manufacturing	33430	1,292	1,285	7
Semiconductor and other electronic components manufacturing	33440	35,730	32,537	3,194
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	33451	3,982	3,764	219
Search, detection, navigation, guidance, aeronautical, and nautical system and instruments manufacturing	33452	7,870	2,857	5,013
Measuring and control instruments manufacturing (not listed elsewhere)	33459	3,855	3,670	185
Electrical equipment, appliances, and components manufacturing	33500	5,229	4,819	410
Motor vehicles manufacturing	33610	15,268	13,564	1,704 i
Motor vehicle body and trailer manufacturing	33620	155	155	0
Motor vehicle parts manufacturing	33630	8,030 i	6,715	1,315 i
Aircraft manufacturing	33641	10,720 i	5,087	5,633 i
Aircraft engine and engine parts manufacturing	33642	2,104	1,082	1,022
Other aircraft parts and auxiliary equipment manufacturing	33643	1,434	1,079	355
Guided missiles, space vehicles, and related parts manufacturing	33644	3,496	954	2,542
Railroad rolling stock manufacturing	33651	210 - 2,180 i	211 i	0 - 1,969
Ship and boat building	33660	182 - 2,152	183	0 - 1,969
Motorcycle, bicycle, and parts manufacturing	33691	367	367	*
Military armored vehicle, tank, and tank components manufacturing	33692	541	298	243
All other transportation equipment manufacturing	33699	465	456	9
Furniture and related products manufacturing	33700	458	450	8
Medical equipment and supplies manufacturing	33910	14,759	14,538	222
Miscellaneous manufacturing not listed elsewhere (games, office supplies, slot machines, etc.)	33990	2,558	2,516	42
Merchant wholesalers, durable goods	42300	756	659	97
Merchant wholesalers, nondurable goods	42400	945	926	19
Wholesale electronic markets and agents and brokers (business to business)	42500	37 i	33 i	4
Retail trade (except electronic shopping and electronic auctions)	44000	280	280	*
Electronic shopping and electronic auctions	45411	0 - 13,286 i	0 - 11,353 i	0 - 1,969
Transportation	48000	9,398 i	9,016 i	382
Couriers, messengers, and express delivery services	49200	290	290	0
Warehousing and storage	49300	128 i	124 i	4
Newspaper, periodical, book, and directory publishers (except Internet)	51110	84	84	*
Software publishers (except Internet)	51120	24,851	24,104	747
Motion picture and sound recording (except Internet)	51200	72	53	19
Broadcasting (except Internet)	51500	0 - 2,469	0 - 501	0 - 1,969
Wired telecommunications carriers	51710	424	416	8
Wireless telecommunications carriers (except satellite)	51720	2,306	2,271	35
Satellite telecommunications	51740	475	470	6
Other telecommunications (not listed elsewhere)	51790	492	459	33
Data processing, hosting, and related services	51800	8,994	8,836	158 i
Cloud computing applications and Internet-based software services	51801	27,957	27,617	340

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Other information services, including Internet publishing, broadcasting, and Web search portals	51910	46,100 - 48,070	46,101	0 - 1,969
Finance: banking and credit intermediation	52200	4,924	4,923	1
Securities, commodity contracts, and other financial investments and related activities, including funds and trusts	52310	1,445	1,418	27
Insurance carriers and related activities	52400	2,202	2,202	0
Real estate	53100	396	396	0
Rental and leasing services	53200	945	945	0
Lessors of nonfinancial intangible assets, including patent licensing	53300	59	58	*
Legal, accounting, tax preparation, bookkeeping, and payroll services	54111	1,979	1,979	0
Architectural, engineering, and related services	54130	4,474	2,569	1,905
Specialized design services	54140	163	112	51
Computer systems design and related services	54150	19,667	17,324	2,343
Management, scientific, and technical consulting services	54160	2,842	1,897	945
Research and development services in social sciences and humanities	54172	764	27	736
Research and development services in biotechnology	54173	5,648	953	4,695
Research and development services in physical, engineering, and life sciences (except biotechnology)	54174	15,171 i	2,569	12,603 i
Advertising and related services	54180	1,106 i	1,101 i	6
Professional, scientific, and technical services (not listed elsewhere)	54190	1,646	1,142	504
Management of companies and enterprises	55100	0 - 13,286	0 - 11,353	0 - 1,969
Administrative and support services	56100	3,285	3,263	22
Waste management and remediation services	56200	20	17	3
Offices of physicians	62110	508	196	312
Medical and diagnostic laboratories	62150	2,466	1,860	605
Other ambulatory health care services (ambulance, dental, home health care)	62199	148	147	1
Hospitals and nursing care facilities	62200	0 - 11,355	0 - 11,353	1 i
Social assistance services	62400	0 - 11,353	0 - 11,353	0
Arts, entertainment, and recreation	71000	415	415	0
Accommodation and food services	72000	80	80	0
Other services (not listed elsewhere)	81000	660	380	280
Undistributed	-	0	0	0

* = amount < \$500,000; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

^a Data are tabulated independent of the industry classification of the company. Companies were asked to report their sales and R&D activity in one or more business activity codes.^b Business codes and descriptions are based on 2012 North American Industry Classification System industry definitions.**Note(s):**

Detail may not add to total because of rounding. For companies that did not report business codes, the classification used for sampling was assigned. Beginning in survey year 2018, statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D. This change has affected the comparability of these estimates with estimates published for years prior to 2018. An estimate range may be displayed in place of a single estimate to avoid disclosing operations of individual companies.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2019.